UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

OUTDOORS WITH THE SCIENTIST Tuesday, January 1, 1929.

NOT FOR PUBLICATION

SPEAKING TIME: 10 minutes.

ANNOUNCEMENT: About a month ago, the Weather Man told Station_____'s radio audience about some common weather signs and weather fallacies. It's his turn to talk to you today and we have a tip that he's going to talk about the United States Weather Bureau's new weather service to airmen. His chat comes as this week's OUTDOORS WITH THE SCIENTIST radio feature, prepared by the United States Department of Agriculture.

--ooOoo--

My friend and I were down at the flying field, where the earth meets the sky. Waiting for the fast mail plane to fly in from the West. It was then 1:30. The plane was due at 1:40. We had 10 minutes to wait.

Over in the hangars, mechanics in tan overalls were working on the "ships." Some one was whistling "Blue Heaven." The explosive whirr of a powerful engine being tuned up shut out the high notes.

Out on the field, several planes were being put into final trim for their adventurous journeys into the blue. There they stood--- impatient--- their long, blunt snouts pointing off into the air. They seemed nervous--- eager to be off. High in the air above us we heard the insistent drone of a couple of planes sweeping through the clouds as if playing "hide and seek." Suddenly, on our left, there broke out a heavy, stuttering roar. Another big, grey ship was ready to go. Its propellor whirred in a steel-blue circle. Now the machine is off. Gathering speed, it skips across the frozen ground. Now and then it takes light, graceful leaps into the air. It glides up at an angle--- and doesn't come down. Another 5 minutes and it'll be only a vague, white "T" in the sky--- nosing off into the West horizon.

My friend turned to me. "Craig made a pretty take-off, didn't he?" I nodded. "He should reach Metropolis by sundown--- if a storm doesn't come up and force him down, as it did last time," my friend added.

"He'll find it fair all the way, Jimmy," I said. "No storms today."

Jimmy was surprised. "How do you know?" he asked. "It's 500 miles to Metropolis. Craig might run into a cloud bank or a blizzard 200 miles out."

"Not today," said I. "At least, the chances are 10 to 1 he won't."

"Sure--- it's fair HERE, all right," said Jimmy. "But how in Sam Hill can you tell what the weather's like in Metropolis? And in all the 500 miles between here and Metropolis?"

And that got us started talking. We still had about 7 minutes befor the mail plane was due. So we found a couple of boxes and sat down. I was wondering, while we talked, if all the people who received those Christmas greetings marked AIR MAIL thought about the story of thrills and danger that lay behind them..... I spoke of that to Jimmy.

"Have you ever stopped to think what it means to get a letter stamped AIR MAIL?" I said. "For that 5-cent stamp, you buy courage and service. Believe me, it takes nerve and skill to carry the mail through the air. Nerve as great as the boys who carried the mail on ponies through Indian country in the old Pony Express days, had(On a day like this--- bright sunshine, a blue sky overhead, it's nice going. But it's the blizzards, high winds, storms, fog--- that try the aviator's mettle. But the mail must go, fair weather or foul. Many of Uncle Sam's POSTMEN OF THE AIR fly through the inky blackness of night and often under the most hazardous and unpleasant weather.

"On all the many air mail routes," I went on, "pilots pay the closest attention to what they and the weather men call VISIBILITY and to what is called the CEILING, that is, the highest altitude before they reach the clouds. Take Craig, who just took off. He knew what the weather's like around here just as well as you do, Jimmy. Looked pretty confident, didn't he? Well, the weather reports he got this morning before he took off, helped to make him confident. They told him that the visibility is good today, that there'll be practically no cloud hazard, and that only a slight wind is blowing. Air pilots pay special heed to the height of low clouds. They're interested in wind velocity, also, both on the surface and in the upper layers of the air. They don't pay much attention to rainfall--- unless the clouds are low and heavy. Snow fall is of much importance to airmen because it may increase the load of the plane and cause accidents. Of course, the aviator taking a short hop isn't so particular about weather conditions. But when a chap's taking off on a long cross-country flight, he wants to know as much as possible about weather conditions all along the "road." Sometimes it means life or death to him."

Jimmy broke in. "As you say," he said, "it's easy enough to see what the weather's like here. But how do you know what it's like 1,000 or 5,000 feet in the air? Or between here and a city 500 or 600 miles away? That's what I'd want to know if I were flying with valuable mail."

"Naturally," I replied. "And that's just where the Weather Bureau's new meteorological service for commercial aviation steps in. About 2 years ago, Congress passed what is known as THE AIR COMMERCE ACT OF 1926. The purpose of this Act is 'to encourage and regulate the use of aircraft in commerce.' The service is new and not completely in operation even yet. But already it's giving weather reports, forecasts, warnings, and advices

of great value in 'promoting the safety and efficiency of the air navigation in the United States and above the high seas,' as the wording of the Act goes."

Then I gave Jimmy a few figures. I told him that the Airways Division of the Department of Commerce reports that there are now about 14 thousand miles of air mail routes in operation in the United States. About 8 thousand miles of these airways are lighted with beacons for use in night flying. It is proposed to have 22 hundred more miles lighted by July 1, 1929. And before long the total mileage of mail airways will be increased by 6 thousand more miles which will extend the mail routes clear down to the Canal Zone.

"Now, the work of the Weather Bureau in this aviation service," I went on, "really consists of observing, measuring, and investigating conditions of the atmosphere--- advising upon the suitability of proposed air routes as regards their weather conditions--- and establishing and operating weather offices and stations."

"That's a bit too highbrow for me," said Jimmy.

"Well, in other words, Jimmy," I explained, "a lot has been said about what should be done to protect the airways and aircraft. This new Weather Bureau service gets down to business and actually does things. For example, it makes daily reports of the condition of both the surface and upper air. It makes short-range forecasts giving the outlook for from 1 to 5 or 6 hours in advance. The length of the period naturally depends on how long the flight is going to last. And then the Bureau forecasts the weather for the next 12 to 24 hours. There are about 40 stations in the United States that make daily observations of UPPER AIR conditions. These are made with the aid of BALLOONS and other equipment and are especially valuable to aviators. In addition, the regular weather offices throughout the country--- more than 200 of them--- make daily observations and records of the SURFACE weather conditions. These are also used by airmen. A number of both kinds of weather stations are located on established air routes. All of these stations make at least two observations a day. Some of them make hourly observations both night and day."

"What do you mean by OBSERVATION?" Jimmy wanted to know.

"We mean simply an investigation or a study of the condition of the air--- the weather, really," I said. "The weather observers measure the speed and direction of the wind--- the temperature--- the rainfall or snowfall--- the kind and height of clouds in the sky--- the visibility, (or how far and how well you can see)--- the fog, haze, or smoke in the air--- thunderstorms--- squalls--- blizzards--- vapor, etc. These conditions are noted at about the same time each day--- generally early in the morning--- by all the stations. Each station then telegraphs the conditions to other stations. All this information shown on weather maps makes

it possible for an air pilot to read at a glance the air conditions he is apt to meet on his flight, no matter whether it's a long or a short one. It gives him a bird's-eye view of the air and weather--- see? As I said before, most of the stations make these observations twice a day. And our friend, Craig, studied those maps and weather reports before he took off today."

"I'm beginning to see through it," said Jimmy. "But can these forecasts be trusted?"

"Well, you can always depend on the fact that they are made on the basis of the best knowledge and experience of expert weather men," I said. "On the whole, weather forecasts made by Bureau offices are about 80 to 90 per cent verified. The Bureau's responsibility is over when it makes the best observations it can and then releases them to the public on time. The air pilots get their weather observations in the morning--- around 9 o'clock, say. Well, it's not the Weather Bureau's duty as weather observers to advise a pilot whether he should fly or not on a particular day. But it IS our duty as trained weather observers to let a pilot know what the air conditions will be here and in the place where that pilot is going."

"That's a fair-size assignment in itself," said Jimmy.

"Right," said I. "But here comes our mail plane. I'd know that plane's song in a thousand. Guess I'll have to finish telling you how we make all those observations some other time. There's a lot more to say."

And then we went down to meet the pilot of the big plane as he landed. He said that everything was rosy all the way along but that it was pretty cold up there.

--ooOoo--

ANNOUNCEMENT: That concludes the OUTDOORS WITH THE SCIENTIST chat for today. Uncle Sam will broadcast another one through Station_____ next Tuesday. There'll be another weather-man chat before long, too.

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UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

OUTDOORS WITH THE SCIENTIST. RELEASE: Tuesday, Jan. 8.

NOT FOR PUBLICATION

SPEAKING TIME: 10 minutes.

ANNOUNCEMENT: This talk, coming as this week's OUTDOORS WITH THE SCIENTIST radio chat, deals with that interesting, but sly and destructive, bird, the English sparrow. Information on the bird's history, ways, and control measures is featured. The talk was prepared by specialists in the United States Department of Agriculture for broadcast by Station_____.

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Back in 1851 according to a statement of a specialist in the Biological Survey of the U. S. Department of Agriculture, somebody got the idea of populating a few city parks with birds that wouldn't fly away....

Now, that was a good idea--- but it worked entirely too well in one particular.

For among the several kinds of European birds introduced, was the house sparrow or the common English sparrow.

The trouble is, this English sparrow wouldn't stay in the parks, and eventually it spread from the Atlantic to the Pacific Coast and from the Gulf of Mixico well into Canada.

That's a pretty big park, you know....

At first, the English sparrow stayed in town. But it multiplied so fast that pretty soon the farmers were saying strong words because sparrows ate up their grain. We're going to tell, in this chat, some of the facts about it. That is, we are if we can make ourselves heard above the chit-chat of those sparrows out in the yard.

Let's begin with a few sentences found in Uncle Sam's bulletin on THE ENGLISH SPARROW AS A PEST. If you want to know the number, it's Farmers' Bulletin 493-F. This bulletin gives a summary of an older body of opinion on the sparrow.

"It is known at times to destroy fruit, such as cherries, grapes, pears, and peaches. It often destroys buds and flowers of cultivated trees, shrubs, and vines. In the garden, it eats seeds as they ripen and nips off tender young vegetables-- especially peas and lettuce -- as they appear above the ground. It damages wheat and other grains, whether

newly sown, ripening, or in shocks. As a flock of 50 sparrows requires daily the equivalent of a quart of wheat, the annual loss caused by these birds throughout the country is very great. Years ago it was observed to interfere with some of our most useful birds, such as bluebirds, house wrens, purple martins, tree swallows, cliff swallows, and barn swallows, by taking their nesting places. Similarly it was observed to mob other familiar birds, such as the robin, oriole, red-eyed bireo, catbird, and mockingbird, causing them to desert parks and shady streets of towns. Unlike some of our native birds, whose place it usurps, the English sparrow has no song. It defiles buildings and ornamental trees, shrubs, and vines with its excrement and with its bulky nests.

Its natural diet consists of seeds, but it eats a great variety of other foods. While much of its fare consists of waste material from the streets, in autumn and winter it consumes quantities of weed seed and in summer numerous insects. The destruction of weed seed should undeniably count in the sparrow's favor. Its record as to insects in most localities is not so clear. In exceptional cases it has been found very useful as a destroyer of insect pests. For example, during an investigation of birds that destroy the alfalfa weevil in northern Utah, English sparrows were feeding their nestlings largely on weevil larvae and cutworms, both of which are very injurious to alfalfa. In this case the sparrows, attracted by grain in the fields and poultry runs and by the excellent nest sites afforded by the thatched roofs of many farm buildings, had left the city and taken up their abode in the country where the weevil outbreak subsequently occurred. Unfortunately, however, farmers can rarely expect such aid against their insect foes. Wherever this bird proves useful, however, it is entitled to protection and encouragement in proportion to its net value.

"The evidence against the English sparrow is, on the whole, adverse and the present unfriendly attitude of the public toward it is reflected in our State laws. Nowhere is it included among protected birds."

But we imagine that part about the States not having laws to portect the English sparrow gives the bird a chuckle. That is, if sparrows CAN chuckle. From all we've seen of this bird, it doesn't need much PROTECTION. English sparrows, you understand, have always been pretty good at taking advantage of their opportunities.

Sparrows follow civilization-- take advantage of it. They're not much good at pioneering. They like to live near men so that they can take advantage of sheltered places built by men, for their nests, and of the food grown by men. To show how cunning they are, you'll often find their nests built in warm places near heating pipes in buildings. They've even learned to pick the insects from automobile radiators after they're collected there following a long trip.

The experts say that one reason why English sparrows were brought to this country was that it was thought they would get rid of a certain worm that infested shade trees. These insects had the alarming habit of spinning themselves down from the limbs of trees, right before the noses of people walking in the streets. These were called DROP WORMS and they used

to frighten the flappers back there in the Seventies and Eighties. Well, the English sparrows got rid of these drop worms all right. Also, they got rid of millions of other insects--- both injurious and beneficial. Sparrows, you see, aren't at all particular about their menu. They'll eat anything from drop worms to grapes and from grains to vegetables.

You might be interested to know that sparrows and the blue rock pigeon are the commonest of the very few birds that live in the great steel-and-stone, treeless places we call CITIES. In other words, sparrows are so civilized that they can live in the same places inhabited by the modern Cliff Dwellers of A.D. 1929. A lot of people want to protect them because they're about the only bird friend of city "shut-ins".

To summarize---

English sparrows are abundant in most of the towns and cities in the United States and also in many country districts. Though they're occasionally valuable as destroyers of harmful insects, all things considered they do more harm than good. Practical methods of dealing with them include destruction of their nests--- shooting--- trapping--- and poisoning. Trapping is without doubt the best way. English sparrows are good to eat. Their use as food is recommended by the Department of Agriculture as a means of reducing the sparrow population.

Farmers' Bulletin 493-F tells how to prepare them for food. It also tells how to trap them and take care of them in cages until they're wanted in the kitchen. Of course, the only sparrows that can be used for human food are those that are cought in traps, or shot.

Department experts say that the best way to prevent the increase of sparrows in a locality is to destroy their nestsevery 10 or 12 days during the breeding season. In a town of 4,000 people--- where this method of attack was practiced for 4 years--- 20 thousand eggs were destroyed and the sparrow population greatly cut down. The work shouldn't be entrusted to young boys, however, as they're apt to destroy the eggs and young of valuable birds that they mistake for sparrows.

The Bulletin mentioned (4-9-3-F) fully describes effective trapping methods. There are line drawings of successful traps, with directions on how to make and use them. Trapping is the best way to capture large numbers of sparrows.

"Where the use of poison isn't prohibited by law," say Department specialists, "it may be used effectively to reduce the numbers of sparrows. The most satisfactory poison is strychnine." It's easy to prepare and it acts quickly. Wheat makes a good bait. Here's a good way to prepare poisoned bait---

Put one-eighth ounce of pulverized strychnine into three-fourths of a gill of hot water---

Add one and one-half teaspoonfuls of starch or wheat flour moistened with a few drops of cold water---

Heat, stirring constantly till the mixture thickens.

Pour the hot poisoned starch over one quart of wheat. Stir till every kernel is coated.

Small-kerneled wheat sold as chicken feed is better than first-quality wheat as it's cheaper and more easily eaten by the sparrows.

Then spread the poisoned wheat on a hard, flat surface to dry. Dry the bait thoroughly and store it in jars for future use.

Oats, hemp, or canary seed may be used, but wheat is best for this purpose.

Caution--- SPARROWS SHOULD BE POISONED IN SECLUDED PLACES WHERE DOMESTIC ANIMALS WILL NOT BE ENDANGERED. Roofs, back yards, and unused poultry runs are good places. If you have chickens or pigeons on the premises, place poison for the sparrows in small, covered pens made of coarsely meshed wire netting, with the sides raised not more than an inch and a half above the ground. AND MAKE SURE THAT ANY POISONED BAIT IS STORED WHERE CHILDREN CAN NOT GET AT IT.

---ooOoo---

ANNOUNCEMENT: That concludes today's OUTDOORS WITH THE SCIENTIST radio chat, prepared by the United States Department for broadcast by Station_____. The publication mentioned, Farmers' Bulletin 493-F, called THE ENGLISH SPARROW AS A PEST, goes into the whole matter in much greater detail. A free copy will be sent you on request to this Station, or to the United States Department of Agriculture.

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UNITED STATES DEPARTMENT OF AGRICULTURE
Radio Service
OFFICE OF INFORMATION

OUTDOORS WITH THE SCIENTIST Tuesday, January 15, 1929.

Not for Publication

Speaking time: 10 minutes.

ANNOUNCEMENT: About all some folks know about the National Forests is that they should be careful with bonfires on Uncle Sam's woods land. But the specialists in the Forest Service of the United States Department of Agriculture say there's a lot more to know. These things-to-know are outlined in today's talk on The Uses of the National Forests, prepared by Uncle Sam's forest experts for broadcast by Station_____. Let's let Uncle Abe--- who's not so old--- tell this story today.....

--ooOoo--

"Some years back, when I was a boy," Uncle Abe begins, "I lived on a cattle ranch near one of the borders of the Caribou National Forest, in Wyoming. We used to graze cattle on this Forest, under permit, and late in the Fall would go into the hills and cut cottonwood for the Winter's supply of fuel. And, at odd times through the Summer, my dad and uncle--- who owned this ranch--- would go into the trees on this National Forest and cut fence posts. We hauled 'em down to the road with an old white horse called Lil.....

"Well--- when I wasn't too busy weeding the garden and smooching smoked meat out of the old log house that served as granary and store house--- I'd go along and help the men out. One day, old Lil, who was so old she probably was once used to fight Indians, bucked me off. The men laughed, but said I'd learn about ranching when I grew up.

"I did.... And I also learned a lot more about the National Forests that I'd lived near all my life.

"I learned about ranching from the ranch-hands. But I learned about the uses of Uncle Sam's wide-flung public forests from some of Uncle Sam's forest experts just lately. 'S funny how long a man can go without learning some of the most important things in life...."

Uncle Abe paused a moment and whittled a long sliver of white wood off the stick he held in his left hand. He likes to whittle as he talks.

"When I was a boy, running wild on a Wyoming Cattle ranch, I didn't think that some day the National Forests would become the vacation grounds of the Nation. You see, that was before the first automobiles came to Wyoming. But I guess there was one or two of the first little gasoline buggies chugging along on 2 cylinders on some of the rich streets of Eastern cities. I thought about all the National Forests were good for was to furnish grazing for the white-faces or the long-horns, fence posts for the lucern fields, and a little

wood for the stove. But nowadays you'll find service stations, apiaries, meadows, stores, offices, logging camps, corrals, and a dozen other enterprises running full blast on these lands--- all under permit from the Government. Times have changed, I guess.

"But I'm getting ahead of my story," said Uncle Abe. "Let's go back to the beginning---

"Ever since I was a boy, I've been interested in the hills, the streams, and the woods. I'm mighty glad that Uncle Sam takes a hand in protecting and conserving them for us.

It took me a long time to learn just how far he goes.

"But I always wanted to know more. And so, when I was in Washington last Summer, I visited the Forest Service and talked it over. And I took notes--and listened with both ears wide open. Here's what he told me--- The forest expert, I mean---"

Uncle Abe chose a new stick. I judged his talk would take about 6 minutes by the size of the stick. Listen---

"'Way back in 1905, Secretary of Agriculture James Wilson laid down a principle for the administration of the National Forests that has been a guide ever since. He said: ALL THE RESOURCES OF NATIONAL FORESTS ARE FOR USE, AND THIS USE MUST BE BROUGHT ABOUT IN A THOROUGHLY PROMPT AND BUSINESSLIKE MANNER, UNDER SUCH RESTRICTIONS ONLY AS WILL INSURE THE PERMANENCE OF THESE RESOURCES. In other words, the guiding principle in the Government's administration of the National Forest is, and has been, CONSERVATION WITH USE. Of course, even when I was a boy, I knew that these lands were open to the public and that their resources were for present use and public benefit. Well, the idea hasn't changed in the years that have passed since then."

Uncle Abe went on.

"When I was a boy on the ranch, the 2 main uses of the National Forests were for timber cutting and the grazing of livestock. It's the same today, the Washington expert told me. The contracts for timber-cutting are awarded to the highest bidder who can give guarantee of his financial soundness. The interests of local industry and the community welfare are also considered. This timber cutting, of course, is done under strict supervision of Forest men. And it must be done in such a way that the future timber production of the region is not injured. In other words, the cutting is done scientifically and conservatively.

"Grazing is allowed under permit only when range management plans have been carefully worked out so that the forage supply of the National Forests will be plentiful year after year. Over-grazing is never allowed. The number of head of stock on the range is determined by the carrying capacity of that range.

"When the uses of the National Forests are for the benefit of the general public, no fee is charged. But when the uses are of an exclusive nature--- or for an individual benefit--- a reasonable annual fee is levied."

I asked Uncle Abe if the Government makes any money on the National Forests --- if they pay for themselves.

"Last year," said Uncle Abe, "timber sales, grazing fees, and various special use fees brought in to the Government a revenue of more than 5 million dollars. But, of course, the National Forests aren't being run for profit. That is, for money-making. The costs of yearly operation of the Forests balances with the revenues. But when you come to the costs of improving the Forests--- by the building of roads and trails, planting of trees, research into Forest methods, and so on--- the total cost is greater than the total receipts by a considerable amount. Much of the land that has come into Government ownership, you see, has been so exhausted by wasteful cutting, over-grazing, and repeated fires in the past, that it'll take a long time before it can be brought back to a fully productive condition. National Forest receipts, however, are increasing and someday the forests will be self-sustaining."

Then Uncle Abe went on to tell about permits. He said that granting a permit for special use of the National Forests is a simple matter. Ninety five per cent of the business is handled directly on the ground by field officers of the Forest Service. When a special use of the Forests is asked for, an examination is made to find out whether it will be for the best use of the land and not in conflict with public interests.

I asked Uncle Abe what class of people make the heaviest use of the National Forests.

"Pretty hard to say as to that," he said. "The Washington officials told me that Western livestock growers are the most numerous occupants of the National Forests. Pastures, drift fences, corrals, stock-watering tanks, dipping vats, slaughter houses, and shearing plants are allowed on the lands under permit. Stockmen also use a considerable proportion of the cabins kept on National Forests under permit.

"People who are out for vacations and for recreation make up another large group of special-use permittees," Uncle Abe continued. "There are nearly 9 thousand Summer residents on National Forests. Permits are also granted to resorts and club houses, hotels and roadside inns. There are also a few golf courses and tennis courts, and 2 playgrounds on the National Forests. Of course all this is in addition to the heavy free use of the lands for picnicking, camping, fishing, hunting and so on. Millions of people make use of the National Forests in these ways every year. About 15 hundred camp grounds have been set aside for these folks. Of course, fishing, hunting, and trapping on National Forests are governed by State laws and require no permit from the Forest Service. But there are some special uses of the lands related to these activities. For instance, there are 251 fur farms maintained under permit, most of them in Alaska. There are more than 80 fish hatcheries and also some fish canneries and salteries, on National Forests and operated under permit. The bee industry is represented by a number of apiaries under permit.

"National Forests--- the foresters told me--- are freely available for schools, churches, and cemeteries," said Uncle Abe. "And stores, offices, community watersheds, wells, springs, windmills, reservoirs, pipe lines, railroads, electric roads, logging railroads, telephone lines, bridges, and trails are also permitted under special conditions. And there are numbers of these now in operation on Uncle Sam's forests."

Uncle Abe was whittling the last slivers from his stick. He paused a minute and then summed up this way---

"I guess I would have been surprised, when I was a boy, had I known that the National Forests are open to a man who wants to cut wild hay--- operate a service station--- harvest honey--- retire to a home far from the madding crowd--- or get a good site for some other kind of enterprise! I guess I thought that the Forests were mainly for cattlemen and wood-cutters. But I've learned since that these great public forests are PUBLIC forests in a big way. And I've got a lot of sympathy for the men who are saving and conserving the National Forests for the American public. Haven't you?"

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ANNOUNCEMENT: That concludes today's OUTDOORS WITH THE SCIENTIST radio chat from the United States Department of Agriculture. Station_____ will broadcast another one next Tuesday.

UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

n30s

OUTDOORS WITH THE SCIENTIST Tuesday January 22, 1929

NOT FOR PUBLICATION

SPEAKING TIME: 9 Minutes.

ANNOUNCEMENT: Some folks believe that toads cause warts. Others think that a dead toad, turned on its back, means rain before night. Still others believe that toads bring good luck, or that stammering can be cured by rubbing a toad on the back of a child's neck, or that toads cause a cow to go dry. Toads have value even if these superstitions are wrong. And in today's OUTDOORS WITH THE SCIENTIST radio chat, an expert is going to tell why. This talk on toads comes direct from the United States Department of Agriculture for broadcast by Station_____.

---ooOoo---

Sometimes the homeliest things have most interesting habits...

Take the toad, for example. It would be pretty hard to find anything homelier than a toad--- or more fascinating to study!

For some reason or other, toads have been connected with sorcery, witchcraft, and the black arts for centuries. When you think of toads, like as not you also think of witches and hob-goblins, magicians, and sorcerers. Even in these modern times, toads are surrounded with queer superstitions. I remember when I was a boy we used to believe that if a toad were killed and turned on its back, there would be rain before night. We didn't dare handle toads for fear of catching a bad case of warts. But some folks believed that you could cure a child of stammering if you rubbed a toad on the back of its neck. And if you found a toad in a new-dug cellar, that meant good luck. Some farmers still think that toads cause cows to go dry or else give bloody milk.

Do not smile. There isn't anything in these queer beliefs except that millions of people have held them for several hundred years....

Do you read the newspapers? If you do, you probably remember the story about a toad being found ALIVE after it had been imbedded in stone for some 30 years! Well, toads live a long time--- if they keep away from their many enemies--- but not THAT long in a stone coffin.

As a matter of fact, investigators have tried this thing out. Toads were confined in specially constructed cavities in blocks of limestone and sandstone. These stone blocks were buried 3 feet deep in the garden. The toads that were shut in the sandstone blocks were found quite dead when the boxes were opened at the end of 13 months. Those that were confined in limestone died before the end of 2 years. One scientist has shown that a toad can live for a year when sealed up in a block of limestone. Of course,

a toad can get along without food for a long time, but the length of the fast seems to depend largely on the temperature. That is, on whether or not the toad is kept in a state of dormancy.

There's an old story about toads that are said to have been found at some place in France and that were thought to be 200 years old. As the story goes, these toads were dressed in green velvet and kept in terra cotta vases by a sorceress. An interesting yarn--- but probably exaggerated. If toads live to be 200 years old, we might be able to use their secret of how to live for several golden weddings...

Are toads poisonous?

Let's let the scientists answer that question. Most toads have warty skins. You'll generally find most of these warts on the sides of the neck. And these warts, together with a pair of large glands situated behind the eyes, secrete a milky, poisonous fluid when the toad is molested. This secretion protects the toad against most animals, but not against snakes or birds of prey, the scientists say. Sometimes skunks eat toads--- but before they do it, they are said to roll them about roughly with their paws until the poison has been discharged from the glands and rubbed off. Have you ever seen a dog bite a toad? Well, the experience seems to be unpleasant and I have never known a dog to make a practice of biting toads. The secretion of these glands is what chemists call an ACRID IRRITANT, which causes pain in cuts and produces a bitter taste in the mouth. A large toad of the southwest produces enough poison to kill a dog biting it.

Department of Agriculture investigators say that some frogs also produce these venoms in large quantities. The Choco Indians of South America, use a venom gotten from frogs to poison their arrowheads. It's said that the Indians of Colombia use the secretions of another kind of frog for the same purpose. The Indians hold the frog over a fire and then scrape the poison off. The poisoned arrows are used mainly to shoot monkeys. And the same poison is used by dealers to produce yellow feathers on Amazon green parrots. First, the blue and green feathers of the parrot's head and neck are plucked out. Then the head and neck are rubbed with the back of a living frog. When the feathers grow out again they are yellow, instead of green or blue.

Nature has many secrets!

Toads aren't rare--- you find 'em in every State in the Union--- but there are some rare toads. There are smooth-skinned toads, for example. And down in Central America and Mexico there's a toad known as the AGUA, which sometimes has a body length of 9 inches and a mouth large enough to swallow small birds. These toads are said to eat rats, but insects make up most of their diet. Probably the smallest living toad is the OAK TOAD of the Southeastern United States. It feeds mainly on ants.

The common toad--- known as BUFO AMERICANUS to the scientists--- has been found as far north as southern Labrador and as far south as Louisiana. In the United States, this toad is not commonly found west of the 100th Meridian, a line running from the Dakotas to Texas. But there are plenty of other kinds of toads in other parts of the Union.

Now let's take a toad and follow him through the year. It might be a bit hard to eat what he'll eat, and to croak such questionable love songs as he will--- but let's see what he does, anyhow, purely in a spirit of scientific curiosity. Depending on locality, the toad will come out of Winter hibernation some time between the middle of March and the first of April. He then proceeds to some shallow pond or the overflow of a stream. The males usually beat the females to the water. But they don't begin to SING until about the third week in April, or maybe early in May. The common toad has a musical trill.

During the spawning or breeding season, it isn't unusual to find hundreds of toads gathering in a small pond. Under normal conditions, the female begins laying at once. She may lay from 4 thousand to 15 thousand eggs. The egg-laying is generally completed in a day--- unless it turns off cold. Eggs are laid in long spiral strings of jelly. It takes from 3 to 8--- or from 8 to 12 days--- for the eggs to hatch, depending on the temperature. Toads are born in the water. Newly hatched toads look like young fish--- are called tadpoles--- and breathe through gills. It takes from 50 to 65 days for a tadpole to change into a young toad.

If the weather is moderate, toads may remain active from March to the middle of November. In Winter they hibernate in the ground. The toad digs its Winter home with its hind legs and always goes down backwards. There's a spur on the hind feet that makes a good digger. As the toad digs in, it lets the dirt fill in over its head. Toads that do not over-Winter below the frost line generally die before Spring. One scientist showed that toads dig down deeper as the frost line comes nearer and nearer to them during the cold months. Toads have drier skins than frogs and they avoid the sunshine. They hide during the warm sunshine in the day and come out to feed in late afternoon and night.

That brings us naturally to the toad's meal time. What does he eat? Well, he's rather easily fooled. I remember that small boys used to drop lighted matches and the toads would snap them up, apparently thinking they were fireflies. And I have even seen a toad try to snap up a marble rolled in front of it. Toads frequently swallow foreign materials that have about as much food value as a piece of rock. A toad's tongue, you may know, is fastened at the front of its mouth and is free behind. It's interesting to watch a toad flash this tongue out and catch a fly or some other insect. That is, if you can follow it.

As I said before, toads do most of their feeding after dark, though they may begin with the soup course, so to speak, just before sundown. An examination of the stomachs of more than 500 toads showed that animal matter makes up about 89 per cent of the food eaten during the season. Vegetable composes about 8 per cent and inorganic matter something like 2 per cent.

Earthworms, sowbugs, snails, spiders, millipeds, and various insects are favorite foods of toads. Many kinds of beetles were found in these stomachs of more than 500 toads, as also were ants, flies, caterpillars, and different kinds of bugs.

On the whole, the Department of Agriculture's specialists think that toads are useful. They sum it up this way: "Toads are beneficial when they eat myriapods, sowbugs, Orthoptera, May beetles, leaf beetles, weevils, and caterpillars.... The number of beneficial carabid beetles, ladybird beetles, and spiders destroyed by toads does not seriously disturb the balance of nature. Under certain conditions, as in greenhouses, gardens, farms, fields of small grain, or golf courses, toads are of service to man.... The bulk of the toad's food consists of injurious forms of insects.... Unlike birds, toads are not endowed by nature with the ability to travel over wide stretches of land in order to aid in combating abnormal local increases of insects and the like."

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ANNOUNCEMENT: You may want to have the information in this radio chat in printed form. If you do, send to the Biological Survey, United States Department of Agriculture, Washington, D. C., for a copy of the mimeographed circular called THE TOAD. It's free as long as the supply lasts. Station _____ will broadcast another OUTDOORS WITH THE SCIENTIST chat next Tuesday.

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UNITED STATES DEPARTMENT OF AGRICULTURE

Radio Service

OFFICE OF INFORMATION

OUTDOORS WITH THE SCIENTIST. Tuesday, January 29, 1929.

NOT FOR PUBLICATION

SPEAKING TIME: 11 Minutes.

ANNOUNCEMENT: A lot of folks are raising bees for pleasure and profit. And a lot more wouldn't mind starting out with a few hives in the back-yard or the orchard. And so we've asked the Bee Man to talk to you briefly today. He's going to talk about bee-keeping in general and Spring care of bees in particular. His talk comes as this week's OUTDOORS WITH THE SCIENTIST radio chat, prepared by the United States Department of Agriculture for release by Station_____.

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The Bee Man took a long breath....

"I'm going to recite a little poem," he said.

I prepared to run, but the Bee Man said it wouldn't take very long. Then he took another long breath--- raised a warning finger--- and declaimed:

"When one neighbor raises flowers,
And another, chickens,
Oft they fight like irate powers,
Daily raise the dickens.

Neighbors ought to strive to please,
Folks should not be scrappy.
Better make it FLOWERS AND BEES,
And be truly happy."

"A very pretty little sentiment," I said softly, smiling at the Bee Man.

"There's much more than SENTIMENT in those words," he said, "as nearly a million bee-keepers in the United States already know. And there's more to the business of bee-keeping than merely striving to please the neighbors. Keeping bees is an important business. The United States EXPORTED more than 12 million pounds of honey during 1927. And I helped furnish some of that honey myself."

That was just the Bee Man's way of introducing the subject I had asked him to tell me about: namely, the care of bees in the Spring. I'm a beginner, myself. Haven't even got used to bee stings yet. So I had gone to the Bee Man for a bit of advice on a subject I'm greatly interested in.

The Bee Man went on --, If you want to make a success raising bees you must become so interested in bees that you think bees -- talk bees -- dream bees -- and never tire of their study. You must anticipate their wants and do the right thing at the right time. Bee-keeping demands care and experience. Those who procrastinate and neglect work that needs to be done, will do well to let bees alone -- unless they hope, by studying bees' good habits, to reform their own bad ones".

"Why are so many women interested in the bee business?" I broke in.

"For several reasons", he told me. "If a woman likes good housekeeping, then the bee is an ideal model. If she likes a woman of business, then the bee is a shining light. If she is interested in the care of children, the bee nurse is an example of perfection. If she believes in the political rights of women, she will find the highest feminine political wisdom in the constitution of the bee commune.

"But anyone who takes up bee-keeping as a hobby should keep only a few colonies -- not more than 2 or 3 -- so that his pleasure won't become a burden. If you are keeping bees for your health, let the fellow who is raising them on a commercial scale do the worrying about the complicated problems of large-scale bee-keeping." The Bee Man paused.

"Personally, I have only 3 or 4 colonies, But I get a lot of fun out of tending them -- and some honey. We were examining the condition of one of my hives.

"How does it look to you?" I asked. "Do you think those bees are in good condition?"

"Pretty fair," he answered. "The condition of a colony of bees in the early Spring depends mainly on the care given the bees the preceding Autumn and Winter. If the colony has wintered well and has a good prolific queen, preferably young, the chances are that it will become strong in time to store a good surplus when the honey flow comes."

"How early -- and for what purpose -- should a man examine his colonies in the Spring?" I asked.

"The time for the examination depends on how the bees have been wintered. If the bees have been properly prepared for Winter, there will be plenty of honey in the hive for food during Spring, and consequently no Spring feeding will be required. There will also be sufficient bees relatively young to cause a rapid building up in population provided a vigorous queen was introduced the preceding season. If you Winter your bees in one story, however, they should be examined as early in the Spring as there is good flying weather. The purpose is to find out if the queen is present in the hive, -- until the bees can get nectar from the spring flowers. During the Spring examination the wings of the queen may be clipped if it is desired to do so."

"What do you clip the queen's wings for?" I asked.

"So she won't be able to fly when a swarm issues", answered the Bee Man. "If the queen can't fly, she will be found crawling around in front of the hive. You can then put her in a small cage and hang it up in a basket hear the place where the swarm is flying, or getting ready to cluster. The swarm will then settle on the basket and can easily be hived where you want it. Or else you may allow the swarm to return to the hive, as it won't leave without the queen. In this case all queen cells must be removed."

"Should I clip both wings?" was my next question.

"There's no harm in it," my friend told me. "A queen looks better when one wing is left unclipped. The queen's age may be indicated by cutting one wing one year and the other wing the next."

"How should the clipping be done?" I asked.

"Take the queen up from the comb by her wings, with the right hand. Then grasp her thorax gently with the fingers of the left hand. Then clip the wings of one side with small scissors held in the right hand, being very careful not to cut her leg. The larger wing should be clipped just enough to include the tip of the shorter wing."

Then the Bee Man tapped me on the arm, to caution me -----

"Bees should never be handled in the early Spring more than necessary," he said, "When you open a hive in cool weather, it merely wastes heat and may even kill the brood by chilling. Keep the hive as warm as possible in early Spring. That's a great aid to brood rearing. It's a good practice to wrap unprotected hives in black tar paper in the Spring. This conserves the heat of the colony.

"How early will brood rearing start in the Spring?" I wanted to know.

This depends somewhat on how well the bees have wintered, he explained. If they have had poor stores and lack protection -- which cause disturbances of their normal processes -- brood rearing may begin most any time, even during the Winter. If the wintering has been normal, brood rearing outside of the warmer States will usually begin any time from early in March on down to April or May, depending on the climate and location. Brood rearing doesn't make much progress until the bees begin to fly and gather early pollen".

I took advantage of a pause to put in another question that had bothered me. "What's this Spring Dwindling I've heard so much about?"

"It's that mysterious shrinkage--or disappearance--of the bees in a colony in early Spring, after they have come through Winter with a fair number of bees in the hive. Dwindling begins as soon as Spring work gets well started in the hive."

I wanted to know how this dwindling can be prevented.

The Bee Man told me that the way to prevent dwindling is to have plenty of healthy young bees in the hive in the Fall. Then winter them well by furnishing protection and good stores. That's so the bees will be able to get through the Winter with a minimum of exertion. If you do this, the bees will be able to get brood rearing well under way in the Spring, before they're worn out. Dwindling is due to the death of worn-out or old bees, before they can replace themselves with young bees.

"I see," said I. "And here's another question: I want to increase the size of my operations this Spring. In buying a new colony, how may I judge whether it's worth anything or not?"

"This way: A good colony should have all brood combs built straight and evenly in the frames and -- unless in late Fall or early Winter -- half or more of the frames should contain worker brood. Enough bees should be in the hive to fill the space between the frames."

"Do you recommend double-walled hives?" I asked.

"Well", the Bee Man replied, "double-walled hives give considerable protection and are useful where the climate doesn't require heavier packing."

"Can't I make my own bee-keeping equipment?" I finally asked.

"If you're skilful, you might be able to. But beehives require expert workmanship to insure correct spacing of parts. It's best to buy at least the first few hives. I'd recommend beginners to take no chances".

"This has all been very helpful", said I. "I'd like to know where I can get this information --and still more--down in black and white for ready reference".

"I'd recommend that you send for a copy of Farmers' Bulletin 447-F, called "BEES" the Bee Man said. "Then you might also send for the copy of these 3 bulletins that'll suit your conditions: Farmers' Bulletin 1215-F, called BEEKEEPING IN THE CLOVER REGION--- Farmers' Bulletin 1216-F, called BEEKEEPING IN THE BUCKWHEAT REGION--- and Farmers' Bulletin 1222-F, called BEEKEEPING IN THE TULIP-TREE REGION. All of these are published by the U. S. Department of Agriculture at Washington."

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ANNOUNCEMENT: You have just heard this week's OUTDOORS WITH THE SCIENTIST radio chat prepared by experts in the U. S. Department of Agriculture for broadcast by this Station. You may direct your requests for copies of the bulletins to Station_____. The bulletins are: Farmers' Bulletin 447-F, called BEES--- Farmers' Bulletin 1215-F, called BEEKEEPING IN THE CLOVER REGION--- Farmers' Bulletin 1216-F, called BEEKEEPING IN THE BUCKWHEAT REGION--- and Farmers' Bulletin 1222-F, called BEEKEEPING IN THE TULIP-TREE REGION.

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